CLAIMS

What is claimed is:

1. A method for controlling a plurality of pipes in a computer system including at least one central system, the plurality of pipes providing traffic from a plurality of distributed systems, the method comprising:

(a) providing a first plurality of data packets from a pipe of the plurality of pipes to a fast path or a slow path during a time interval such that none of the first plurality of data packets is dropped, the first plurality of data packets arriving in a time interval, the fast path including a fast storage and the slow path including a bulk storage;

(b) providing a second plurality of data packets from the fast storage or the bulk storage to the central system during the time interval such that each of the second plurality of data packets is provided to the central system in a first in first out order.

2. The method of claim 1 wherein the providing step (a) further includes:

(a1) providing the first plurality of packets to the slow path if the occupation of the fast storage for the pipe is above the threshold;

(a2) providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold and a portion of the bulk storage for the pipe is empty;

(a3) providing the first plurality of packets to the slow path if the occupation of the fast storage for the pipe is not above the threshold, if the portions of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time

interval were provided to the slow path;

(a4) providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold, if the portion of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time interval were not provided to the slow path.

3. The method of claim 2 wherein the providing step (a1) further includes:

(a1i) determining whether an occupation of the fast storage for the pipe is above a threshold.

4. The method of claim 3 wherein the providing step (a1) further includes:

(a1ii) setting a transmission signal for the pipe to a zero, a one for the transmission signal indicating that the first plurality of packets are to be provided to the fast path, the zero for the transmission signal indicating that the first plurality of packets are to be provided to the slow path.

5. The method of claim 2 wherein the providing step (a2) further includes:

(a2i) if the occupation of the fast storage for the pipe is not above the threshold, determining whether the bulk storage contains a data packet for the pipe.

6. The method of claim 5 wherein the providing step (a2) further includes:

(a2ii) setting a transmission signal for the pipe to a one, the one for the transmission signal indicating that the first plurality of packets are to be provided to the fast path, a zero

for the transmission signal indicating that the first plurality of packets are to be provided to the slow path.

7. The method of claim 2 wherein the providing step (a3) further includes:

(a3i) if the occupation of the fast storage for the pipe is not above the threshold and if the portion of the bulk storage for the pipe is not empty, determining whether the first plurality of packets for the pipe for the previous time interval were provided to the slow path.

8. The method of claim 7 wherein the providing step (a3) further includes:

(a3ii) setting a transmission signal for the pipe to a zero, a one for the transmission signal indicating that the first plurality of packets are to be provided to the fast path, the zero for the transmission signal indicating that the first plurality of packets are to be provided to the slow path.

9. The method of claim 1 wherein the time interval is proportional to a storage capacity of the fast path for the pipe divided by a maximum possible arrival rate for the pipe.

10. The method of claim 9 wherein the time interval is one eighth of the storage capacity of the fast path for the pipe divided by the maximum possible arrival rate for the pipe.

11. The method of claim 9 wherein the time interval is not more than one half of the storage capacity of the fast path for the pipe divided by the maximum possible arrival

rate for the pipe.

12. The method of claim 6 wherein the time interval is not more than one half of the storage capacity of the fast path for the pipe divided by the maximum possible arrival rate for the pipe.

13. The method of claim 1 further comprising:

(c) performing steps (a) and (b) for each of the plurality of pipes.

14. The method of claim 1 wherein the providing step (a) further includes the steps of

(a1) providing the first plurality of data packets from the pipe the fast path, the slow path, or at least one medium path during the time interval such that none of the first plurality of data packets is dropped, the at least one medium including at least one medium storage;

(b1) providing the second plurality of data packets from the fast storage, the at least one medium storage, or the bulk storage to the central system during the time interval such that each of the second plurality of data packets is provided to the central system in the first in first out order.

15. A computer-readable medium containing a program for controlling a plurality of pipes in a computer system including at least one central system, the plurality of pipes providing traffic from a plurality of distributed systems, the program including instructions for:

(a) providing a first plurality of data packets from a pipe of the plurality of pipes to a fast path or a slow path during a time interval such that none of the first plurality of data packets is dropped, the first plurality of data packets arriving in a time interval, the fast path including a fast storage and the slow path including a bulk storage;

(b) providing a second plurality of data packets from the fast storage or the bulk storage to the central system during the time interval such that each of the second plurality of data packets is provided to the central system in a first in first out order.

16. The computer-readable medium of claim 15 wherein the providing instructions (a) further include:

(a1) providing the first plurality of packets to the slow path if the occupation of the fast storage for the pipe is above the threshold;

(a2) providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold and a portion of the bulk storage for the pipe is empty;

(a3) providing the first plurality of packets to the slow path if the occupation of the fast storage for the pipe is not above the threshold, if the portions of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time interval were provided to the slow path;

(a4) providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold, if the portion of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time interval were not provided to the slow path.

17. A system for controlling a plurality of pipes in a computer system including at least one central system, the plurality of pipes providing traffic from a plurality of distributed systems, the system comprising:

a fast path including a fast storage;

a slow path including a bulk storage; and

a flow regulator for providing a first plurality of data packets from a pipe of the plurality of pipes to the fast path or the slow path during a time interval such that none of the first plurality of data packets is dropped, the first plurality of data packets arriving in a time interval, the fast path including a fast storage and the slow path including a bulk storage, the flow regulator also for providing a second plurality of data packets from the fast storage or the bulk storage to the central system during the time interval such that each of the second plurality of data packets is provided to the central system in a first in first out order.

18. The system of claim 17 wherein the flow regulator includes at least one network processor.

19. The system of claim 17 wherein the flow regulator provides the first plurality of data packets to the fast path or the flow path by providing the first plurality of packets to the slow path if the occupation of the fast storage for the pipe is above the threshold, by providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold and a portion of the bulk storage for the pipe is empty, by providing the first plurality of packets to the slow path if the occupation of the fast storage

for the pipe is not above the threshold, if the portions of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time interval were provided to the slow path, and by providing the first plurality of packets to the fast path if the occupation of the fast storage for the pipe is not above the threshold, if the portion of the bulk storage for the pipe is not empty, and if the first plurality of packets for the pipe for a previous time interval were not provided to the slow path.

20. The system of claim 19 wherein the flow regulator provides the first plurality of data packets to the fast path by setting a transmission signal for the pipe to a one and to the slow path by setting the transmission signal for the pipe to a zero.

21. The system of claim 17 wherein the time interval is proportional to a storage capacity of the fast path for the pipe divided by a maximum possible arrival rate for the pipe.

22. The system of claim 21 wherein the time interval is one eighth of the storage capacity of the fast path for the pipe divided by the maximum possible arrival rate for the pipe.

23. The system of claim 21 wherein the time interval is not more than one half of the storage capacity of the fast path for the pipe divided by the maximum possible arrival rate for the pipe.

24. The system of claim 17 wherein the flow regulator further provides the first plurality of data packets from the pipe the fast path, the slow path, or at least one medium path during the time interval such that none of the first plurality of data packets is dropped, the at least one medium including at least one medium storage and provides the second plurality of data packets from the fast storage, the at least one medium storage, or the bulk storage to the central system during the time interval such that each of the second plurality of data packets is provided to the central system in the first in first out order.